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ABSTRACT

The case study reports the findings of systematic play training with a 7 year old autistic male who had never exhibited play behavior. The research procedure involved three phases: imitation training, training manipulative play, and motivation training. Training during the three phases was conducted three times per week for 7 1/2 months in a quiet area of the self contained public school classroom. Results supported the contention that play behavior can be trained. On immediate posttest the child could perform 100% of the imitations--77% on verbal command and 23% with a model. Training manipulative play with six toys was achieved. The child decreased the frequency of socially unacceptable behaviors and increased the frequency of socially acceptable play behaviors. (Author/SBH)

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Play Training for the Autistic Child

Without Previous Play Behavior

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Running Head: Play training

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Abstract

Autistic children often use repetitive, self-stimulatory movements in their interactions with the environment. Meaningful play with objects or toys may be absent in autistic children: thus, they miss an important developmental aspect of childhood.

This case study reports the findings of systematic play training with a seven year old autistic male who had never exhibited play behavior. The research procedure involved three phases, imitation training, training manipulative play, and motivation training. Training during the 3 phases was conducted 3 times per week for 7½ months in a quiet area of the self contained public school classroom in which the child is enrolled.

The results of the case study support the contention that play behavior can be trained. On immediate post test the child could perform 100% of the imitations; 77% on verbal command, and 23% with a model. Training manipulative play with 6 toys was achieved. Criterion for each toy was obtained within 4 15-minute sessions. These skills were considered prerequisite for motivation to play with toys. The testing of the motivation training indicated that all toys were manipulated more frequently when training sessions were concurrent with motivation testing. When reinforcement alone was used during testing, manipulation of toys decreased. Thus, it appears as if, for this child, motivation is related to training sessions in the use of toys.

Play behavior can be taught to an autistic child. The social significance of this study is that the child decreased the frequency of socially unacceptable behaviors and increased the frequency of socially acceptable play behaviors.

Play Training for the Autistic Child Without Previous Play Behavior

Autistic children often use repetitive, self-stimulatory movements in their interactions with the environment. Meaningful play with objects or toys may be absent in autistic children; thus, they miss an important developmental aspect of childhood.

Play behavior in children is described extensively in the research literature (Bruner, Jolly, & Sylva, 1976; Garvey, 1976; Piers, 1972). Play is seen as a spontaneous activity that has an element of pleasure, and generally, occurs in a familiar environment. Play may include activities which answer questions such as; what does this object do, or what can I do with this object. Play is a skill building activity which is intrinsically motivated (Reilly, 1974) and is an exploratory activity. Despite the abundance of literature on play there is a dearth of research on the development of play in autistic children (Kozloff, 1973).

Black, Freeman, and Montgomery (1975) suggest that autistic children relate better to objects than to peers and that object play is generally manipulative and often repetitive and negative. Children were not able to identify different methods of interaction with an object. Romanczyk, Diament, Goren, Trunell, and Harris (1975) suggest that severely disturbed, autistic children can increase play behavior through the use of food and social reinforcers and shaping. Both of these studies indicated that future research should focus on the role of imitation, modeling, verbal prompting, and schedules of reinforcement. Additionally, it is necessary to focus attention on the quality of play.

There are certain factors which must be considered when working with autistic children. It is often not possible to get the autistic child to atten to stimuli (Lovaas, Schreibman, Koegel, & Rehm, 1971). Ethological research (Richer, 1978) suggests that autistic children have a lowered threshold for avoidance. In an approach-avoidance situation, the autistic child will have a greater motivation for avoidance. Additionally, it is more likely that the autistic child will avoid an interaction especially at a task that has lead to failure (Churchill, 1971). Therefore, it is important that once a child attends to a stimuli that a successful experience is consequent in order to reduce the avoidance of the attention per se, as well as the task due to an experience of failure.

A related factor working with autistic children is difficulty getting the child to model a movement or behavior. Modeling, or imitation, is a form of observational learning (Peterson, 1968) and therefore requires attending to a stimuli which is difficult for the autistic child. Attending to the model must be accompanied by motivation to perform the modeled behavior. Motivating an autistic child is a difficult task (Koegel & Egel, 1979).

A final factor to consider is that autistic children often do not generalize behavior from one situation to another (Handleman, 1979; Lovaas et al., 1973). When generalization does not occur the child is always learning a "new" task.

The present case study investigates the role of modeling, reinforcement, motivation, and systematic play training on the play behavior of a seven year old autistic male who had never exhibited play behavior. Play behavior is defined as appropriate interaction with objects. The

research procedure involved imitation training, training manipulative play, and motivation training.

Method

Subject

Joey is a 7 year old male in a self contained class for children who show atypical, autistic behaviors. Joey is developmentally functioning around 3 years of age. Joey has participated in this program since 1976. Joey's mother provided an account of Joey's play. As an infant and toddler, Joey did not show interest in toys. A favorite object was a rocking horse on which he spent hours sitting and rocking. Repetitive sand play (e.g., beaches and sandbox) was also a favorite activity. Both of these interactions contain elements peculiar to autistic children. The perseverative nature of the "play" and the stereotyped activities engaged in with the toy. The first semi-appropriate play began in the summer of 1977. A truck and boat (small versions of the grandparent's truck and parent's boat) were two toys Joey would move back and forth. During this summer he played with objects in the sandbox. Joey then began collecting small matchbox cars and trucks. Although these activities were more appropriate than his previous play, Joey was exhibiting stereotyped activity with objects.

Joey has recently displayed interest in candles and blocks. These objects were used for stereotyped activities. Joey would build towers and line the candles in a certain pattern. Concomitantly, Joey has demonstrated perseverative interest in driving to water towers in town.

In September and October, Joey spend his free time at school walking through the room in a patterned manner (e.g., forms a large "X"). This activity was repetitive and self-stimulatory. Joey was not responsive

to the environment while he walked. The staff of the program directs Joey to work on puzzles, or other independent activity. This task has the potential of being accomplished quickly but often takes longer due to periods of inattention. Joey does not seek out games, activities, or toys without direct instruction. With instruction he may interact with an object, however, the interaction is likely to be inappropriate and repetitive (e.g., spinning the wheels of a car). In November, the first phase of the intervention began.

General Procedure

The research procedure involved three phases: (a) imitation training, (b) training manipulative play, and (3) motivation training. Training during the three phases was conducted three times per week for 7½ months. The sessions were held in a quiet area of the self contained public school classroom in which the child is enrolled. The method used and results obtained for each phase of the study will be presented. The results are categorical data and, therefore, will be presented using frequency measures. The discussion will integrate the three sections of the study.

Imitation Training

Method. Imitation training involved modeling body movements. The trainer would obtain the child's attention and perform the activity while verbalizing the command (e.g., "clap hands"). The child would receive the command, "Joey, clap hands". After the child was able to repeat each movement with demonstration, then at the next session the child would receive only the command. If the body movement was not performed after 2 commands the therapist would demonstrate while

repeating the command. If the child did not perform the movement, then the next command was given.

The initial set of body movement included 10 commands. When these were imitated on verbal request then new movements were added. A total of 30 body movements were used in the imitation training. The movements included gross motor (e.g., hands over head), fine motor (e.g., scribbling), two-step commands (e.g., stand up and clap), and novel gestures (e.g., wiggle fingers, wink one eye). The child was reinforced for correct responses. In the initial session the child was reinforced for imitating the model. In subsequent sessions, the reinforcement was contingent upon performing the body movement on command. Reinforcement consisted of food (e.g., bits of hershey kiss) paired with the social reinforcement of "good working, Joey".

Results. The results of the imitation training are presented in Table 1. When a body movement was requested initially, the child never

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Insert Table 1

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responded until after the trainer modeled the movement. After the imitation training (see Post 1, Table 1) the child would perform 23 body movement upon verbal command and 7 with a model. A follow-up 10 months later (see Post 2, Table 1) indicates 28 body movements were performed on verbal command and 2 required a model.

Training Manipulative Play

Method. The second phase involved manipulative play. Each week for nine weeks training sessions were conducted for 15 minutes each 3

times per week. Concurrently, imitation training continued to be implemented three times per week. Criteria for appropriate play were established for each of the following toys: van, tractor, wind-up toy television, wind-up record player, wind-up radio, and Diaper Dan doll. The toys were demonstrated by the trainer. The trainer would verbalize the activity being performed with the toy. For example, the wind-up toy record player had three functions, to change the record, to put the record arm on the record, and to turn on the record player. Thus, the trainer would verbalize each function as it was performed. Reinforcement was contingent upon performing a function of the toy. Initially, each appropriate interaction was reinforced with food paired with verbal praise. Gradually the reinforcement was delivered on a variable ratio (VR) schedule. The VR schedule was chosen since it generally produces strong, steady responses and a resistance to extinction (Navarick, 1979).

Results. The 6 toys are divided into 3 categories: wind up toys, doll, and push toys. The results indicate that the most trials to criterion occur when a category of toy is changed. In the order of presentation during training the number of trials to criterion are as follows: 4 t.v., 2 record player, 3 radio, 4 doll, 3 van, 2 tractor-farm. Training manipulative play to criterion was possible in 4 trials or less, on each of 6 toys. In the categories wind-up toys and push toys, less trials to criterion were necessary for successive toys.

Test for generalization. In order to determine if any skills learned in manipulative play generalized, a novel "toy" was built. The toy was called the blue responsive box. It was a blue wooden, rectangular box containing a lever, a desk bell, a light operated by a switch, and

door stop. The test situation consisted of the command "Joey, play with toy". The child's interactions with the box were recorded for a 15-minute period. The number of interactions were recorded each time the child changed the object being manipulated. A total of 54 manipulations were recorded with the following items: 18 lever, 16 desk bell, 16 light, and 4 door stop.

Motivation Training

Method. The motivation training consisted of presenting 5 toys with the verbal cue: "Joey, go play with toys". If the child did not go to the toy area, then the trainer would take his hand and lead him to the toy area while repeating the verbal cue. The criteria was for the child to remain in the toy area for 5 minutes. If he left the toy area the trainer was to redirect him to the toys and pair the verbal cue "Play with toys".

The child was reinforced with food for simultaneously touching and looking at a toy. Reinforcers were given on a VR schedule for appropriate interactions with the toys. After the child maintained a high level of toy touching a shaping procedure was initiated. The child was required to look at and manipulate a toy prior to reinforcement. The manipulation did not have to be appropriate, however, it could not be a repetitive, stereotyped or self stimulatory activity.

Modeling. Appropriate manipulation of 1 of the toys was modeled each week. The modeling included the uses of the toy and ways to play with the toy. The model verbalized the actions being performed with the toy. After a toy had been modeled, reinforcement was given only if the toy was manipulated correctly. However, interaction with toys which had not been modeled continued to be reinforced for the child

simultaneously looking at and manipulating the toy.

Testing. After all of the toys had been demonstrated, the motivation phase was tested. During the test, the toys were available all day and the trainer charted the number of interactions with each toy. The toys were openly displayed in the same area of the room on a daily basis. There were 3 components to the test: (1) Toys available; five minute motivation sessions continue, (2) Toys available, and (3) Toys available; reinstate motivation sessions.

Results. The results from the testing sessions indicate that the mean number of responses to toys is lower without motivation training sessions (Phase II, X = 2.7). The use of the training sessions increases the number of responses to the toys (Phase I, X = 5: Phase II, X = 10.2). Table 2 indicates these results. The baseline (X = 5) is the rate of

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Insert Table 2

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manipulation of toys in the motivation training. Therefore, removing the concurrent training sessions appears to decrease the play behavior. Reinstating the training sessions produced an increase in toy manipulation compared to either the manipulation training sessions of the testing sessions. VR reinforcement was used in all three phases of the testing of the motivation training. Table 3 indicates the frequency

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Insert Table 3

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of manipulation of the toys during each phase of testing. Generally, the pattern of responses remain constant. The child's most frequently manipulated toy was the CB truck with the Jack-in-the-box next, followed by th fire truck and phone. Phase II (no training, VR reinforcement) responses indicate the same pattern of manipulation at a lower level of interaction with the toys.

Discussion

The results of this case study support the contention that play behavior can be trained. On an immediate post test (after 7 months of training) the child could perforem 100% of the imitations; 77% on verbal command, and 23% with a model. Follow-up 10 months after the immediate post test indicate the child continued to be able to perform 100% of the imitations; 93% on verbal command and 7 % with a model. Kozloff (1973) indicated that imitation skills could be taught to autistic children. Imitation training was the first phase of this study for several reasons. First, it was assumed that by the use of positive reinforcement for imitating a model and subsequent performance on command there would be an increased likelihood of the child to imitate other activities. Second, an increase in attending to the environment was expected to be an indirect outcome of imitation training. Imitation is, in and of itself, a form of observational learning (Peterson, 1968) which requires attending to stimuli. Therefore, the increased likelihood of imitating a model and the increased attention to movements or behaviors as a necessary component of imitation were the outcomes of imitation training utilized by the manipulative play phase of the study.

In phase II, manipulative play was trained. The child learned to

manipulate 6 toys to criterion within 4 15-minutes sessions. Training specific skills to be used with toys is an essential prerequisite for motivation to play with toys.

In phase III, motivation was trained. The important factor in the motivation training appears to be the training sessions and not the reinforcement. All toys were manipulated more frequently when training sessions were concurrent with the motivation testing. Reinforcement on a VR schedule was contingent on toy manipulation in the 3 testing sessions. When reinforcement alone was used toy manipulation decreased. Thus, it appears as if, for this child, motivation is related to training sessions in the use of toys. It is possible that training in the appropriate use of toys reduces this child's frustration related to ability to comply with a request. The reduction of frustration is considered to be reinforcing according to principles of learning theory (Navarick, 1979).

The manipulation of toys by this child both is and is not play. It is play because the child is using objects for activities answering the questions; what does this object do, or what can I do with this object. It is not play if play requires a clear indication of pleasure. However, a socially acceptable acitivity (e.g., play with toys) was substituted for a repetitive, stereotyped activity (e.g., wandering around the room in a pattern of an "X"). Additionally, the potential for the educational benefits from repetitive activities. Thus, play training is potentially beneficial to the child.

The lack of generalization of activities from the learning to the new environment is a characteristic of autistic children (Handleman, 1979; Lovaas et al., 1973). An unanticipated anecdotal outcome of this study indicates that the play training was generalizing to the home

environment. In a 3 month period, there were 6 occasions on which the mother reported seeing the child engage in appropriate play. Usually the child was performing a play activity that has recently been trained. Follow up 10 months after the study indicates that the child engages in play activities in response to the verbal cue "Joey, play with toys". There are not presently food reinforcers used for play. Social reinforcement (e.g., "Good playing") is used for appropriate play. Thus, the acquisition of play behaviors was trained and stimulus control (e.g., verbal cues) was organized over the play behavior. These two factors are considered to be important in the development of an autistic child (Lovaas et al., 1974).

In conclusion, the play training procedure suggests that play can be taught to an autistic child. The unanticipated outcome of generalization of play activities from school to home was a positive side effect of play training; perhaps, an indication of increased attending to and knowledge about toys or objects. The social significance is that the child decreased the frequency of socially unacceptable behaviors and increased the frequency of socially acceptable play behaviors.

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Footnotes

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Table 1

Compliance to 30 Imitation Commands by

Modeling or Verbal Command

	Model	Verbal Command
Pre	30	0
Post 1 [a]	7	23
Post 2 [b]	2	28

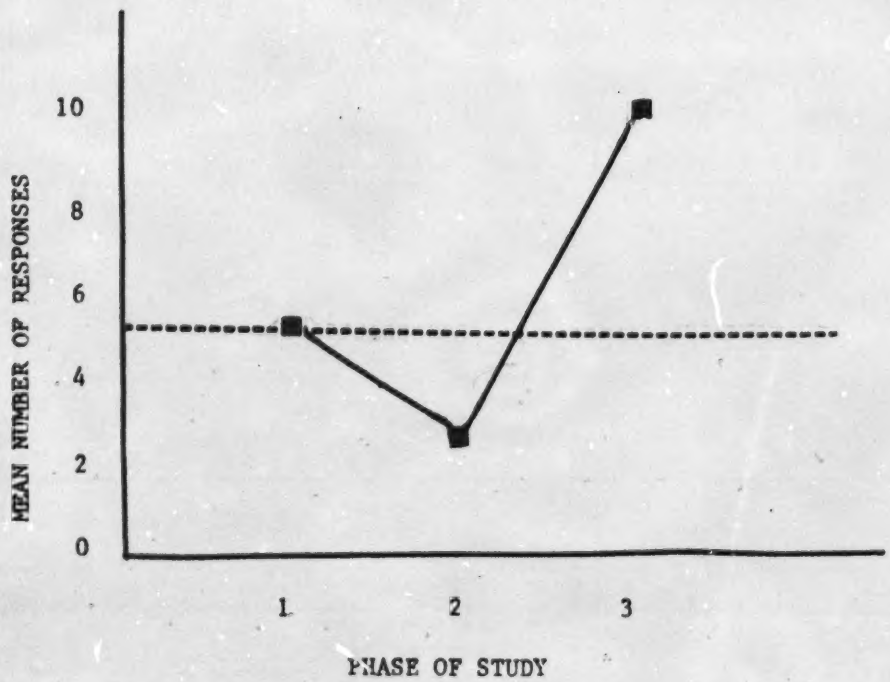
[a] Immediate post test.

[b] Delayed post test 10 months after training.

Table 2

Frequency of Toy Manipulation

by Phase of Testing



Phase of Study
1: Training and reinforcement
2: Reinforcement only
3: Training and Reinforcement

Table 3

Frequency of Toy Manipulation:

Toy Type x Phase of Training